

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

Claims 1 and 2 have been amended. Support for the amendments is provided for example in Fig. 1 and its accompanying description in the specification. (It should be noted that references herein to the specification and drawings are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments.) The claims were not amended previously due to the unforecastability of the remarks presented in the Final Rejection.

Claims 3, 4, 6-8, and 10-12 stand withdrawn as being directed toward non-elected subject matter.

Claims 1, 2, 5, 9, and 13 were rejected, under 35 USC §103(a), as being unpatentable over Takayoshi et al. (JP 2000-165995) in view of Greenstein et al. (US 5,592,730). To the extent these rejections may be deemed applicable to the amended claims presented herein, the Applicants respectfully traverse based on the points set forth below.

Claim 1 now defines an ultrasonic probe having a heat conduction material, within a backing load member, that is provided separately from a signal electrode. The claimed subject matter provides an advantage of reducing the heat radiated from the ultrasonic probe to a patient so that more power may be applied to the probe without harming the patient, thereby increasing the diagnostic depth of the ultrasonic radiation (see specification page 4, lines 5-19, and page 5, lines 12-17).

The Final Rejection acknowledges that Takayoshi does not disclose the Applicants' claimed subject matter of a heat conduction material placed inside a backing load member (see Final Rejection section 6, second paragraph).

In an attempt to overcome this deficiency, the Final Rejection cites Greenstein for an alleged disclosure, in Fig. 14, of electrical traces 22 that serve as a heat conduction material for transferring heat (see paragraph bridging pages 3 and 4).

However, the Applicants note that instant claim 1 now recites a heat conduction material that is not a signal electrode. Specifically, the claim recites that the heat conduction material is "provided separately from said second signal electrode." In contrast, each of Greenstein's electrical traces 22 is a signal electrode (which the Final Rejection characterizes as a heat conduction material). The Final Rejection acknowledges that the proposed heat conduction material 22 within Greenstein's Fig. 14 is a signal electrode. Thus, it is submitted that Greenstein cannot be deemed to disclose the Applicants' claimed subject matter of a heat conduction material that is not a signal electrode.

Accordingly, the Applicants respectfully submit that the teachings of Takayoshi and Greenstein, considered individually or in combination, do not render obvious the subject matter defined by claim 1.

Independent claim 2 now similarly recites the above-mentioned subject matter distinguishing claim 1 from the applied references.

Therefore, allowance of claims 1 and 2 and all claims dependent therefrom is considered to be warranted.

To promote a better understanding of the patentable distinctions of the instant claimed subject matter over the applied references, the Applicants provide the following additional remarks.

The Final Rejection proposes that Greenstein's electrically conductive traces 22 correspond to the Applicants' claimed heat conduction material. However, the Applicants note that Greenstein does not disclose that the electrically conductive traces 22 operate as a heat conduction material.

Moreover, the destination of Greenstein's electrically conductive traces 22 is an electrical circuit, and if the electrically conductive traces 22 operate as a heat conductive material, then the heat would be conveyed to the electrical circuit. A skilled person in the field of electrical circuits realizes that an electrical circuit generates heat, and, therefore, measures are taken to reduce the heat that is generated. Therefore, if Greenstein's electrically conductive traces 22 are used to convey and disperse heat to an electrical circuit, as proposed in the Final Rejection, such a proposal is contrary to the general practice of those skilled in the art. In other words, those skilled in the art usually avoid conducting heat to an electrical circuit.

Furthermore, an "electrically conductive material" is different from a "heat conductive material." More specifically, there are various materials having high heat conductivity and an electrically insulating characteristic. For instance, although aluminum nitride and boron nitride, recited in claim 9, have a high heat conductivity, these materials are not electrically conductive materials, but are insulating materials. If such an insulating material is used as the electrically conductive traces 22 of the above reference, no electrical connection can be established between

the piezoelectric element and an electrical circuit element, and thus such a device would not work.

Therefore, for the above reasons, it is submitted that Greenstein's electrically conductive traces 22 do not correspond to, and do not teach or suggest, the heat conduction material recited in Applicants' claim 1.

Additionally, Greenstein does not disclose or teach the use of a heat conduction material for the purpose of heat conduction. Thus, even if Greenstein were combined with Takayoshi, no person skilled in the art would be led to the instant claimed invention.

Also, Greenstein's electrically conductive traces 22 correspond to the signal electrodes 4 illustrated in Applicants' Fig. 1, since the former and the latter are provided for electrical connection and have nothing to do with heat conduction. According to the instant claimed invention, heat conduction material is provided inside a backing load member separately from the signal electrodes, as made clear by the amendments to claims 1 and 2. Amended claim 1 recites a signal electrode corresponding to one of the signal electrodes 4 of Fig. 1 and also recites that the heat conduction material is provided separately from the recited signal electrode. Claim 2 has been amended in a similar manner.

In view of the foregoing, allowance of claims 1 and 2 and all claims dependent therefrom is considered to be warranted.

It is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respeetfully submitted,

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